

CLAIMS

We claim:

1. A process for converting signals in the form of digital data between an original format, in which the digital data include plural data items and each data item includes a first number of digits, and a compressed format, in which each data item includes a second number of digits that are less than the first number, the process comprising the operation of associating the data items with a configuration including:

creating a first field identifying a number of sub-blocks into which the first number of digits are subdivided;

creating a second field that identifies, within the sub-blocks, respective sections, each including a given number of digits; and

creating a third field that identifies, for each of the sections, a respective one of a plurality of applicable modes that can be adopted for converting the digits in the section between the original format and the compressed format.

2. A process according to claim 1, wherein the digits are binary digits.

3. A process according to claim 1 wherein the plurality of modes includes conversion modes chosen from the group consisting of:

average of digits included in the section;

compression of digits included in the section;

identity between said original format and said compressed format of the digits in the section; and

assignment of a fixed value to all of the digits belonging to the section.

4. A process according to claim 3, wherein the assignment of a fixed value to all of the digits belonging to the section is only adopted in the conversion of the compressed format to the original format.

5. A process according to claim 3, wherein the adoption of the mode of compression, in the conversion between the original format and the compressed format, checks if the digits of the respective section appear with the identical value in all of the sub-blocks of the data item and the adoption, in the compressed format, of a single section for all of the sub-blocks with the identical value.

6. A process according to claim 5, further comprising generating a flag indicating successful compression when the check gives a positive result.

7. A process according to claim 5, further comprising, when the check gives a negative result, adopting an identity mode between the original format and the compressed format for the section.

8. A process according to claim 7, further comprising, when the check gives a negative result, generating a flag indicating compression failure.

9. A process according to claim 3, further comprising identifying in the compressed data, at least one flag indicating that the compressed mode has been successfully adopted for at least one instance of the sections and identically reproducing a matching section for all of the sub-blocks of the reproduced data item in the original format.

10. A process according to claim 9, further comprising ordering the data in compressed format into a data flow, inserting at least one flag in a certain position of the flow.

11. A process according to claim 3, wherein when the said average mode is adopted, the respective section is reproduced, in the compressed format, as the arithmetic average of the sum of the data inside the section in the original format.

12. A process according claim 3, further comprising associating with the data in compressed format a data string identifying the configuration.

13. A process according to claim 1, wherein the conversion from the said original format to the said compressed format includes:

breakdown of the data into the sub-blocks;

organization of the relative sections;

analysis of the sections on the basis of the third field of the configuration, organizing each of the sections according to an instance of one of a plurality of modes, so as to generate, for the respective section, a respective data item in compressed format; and

formatting the resulting compressed data into a compressed data flow.

14. A process according to claim 1, further comprising a converting from the said compressed format to the said original format by:

recognizing, within the compressed data, information identifying the modes adopted for conversion into the compressed format in each of the sections;

decompressing compressed data in the respective sections, generating at least one corresponding section in the original format for each section in the compressed format; and

reconstructing the data in the original format, reorganizing the sections in the original format into the sub-blocks.

15. A process according to claim 14, wherein one of the modes is a compression mode that includes checking if the digits of the respective section appear with the identical value in all of the sub-blocks of the data item and adopting, in the compressed format, a single section for all of the sub-blocks with the identical value, wherein the decompressing step

includes generating, for each sub-block, a respective section with a value corresponding to the identical value.

16. A system for processing signals in the form of digital data, comprising:

a memory unit;

a processing unit for processing the signals;

an input unit suitable for being fed with the signals in the form of digital data;

a compression module for receiving the signals in the form of digital data and converting them from an original format into a compressed format and feeding them to the said memory unit in said compressed format, wherein said compressed format includes a configuration having a first field identifying a number of sub-blocks into which the digital data in original format are subdivided; a second field that identifies, within the sub-blocks, respective sections, each including a given number of digits; and a third field that identifies, for each of the sections, a respective one of a plurality of applicable modes that can be adopted for converting the digits in the section between the original format and the compressed format; and

a decompression module, suitable for receiving said data in the compressed format from the memory unit and converting the signals in compressed format into data in the original format, and then feeding the data in original format to the processing unit.

17. A system according to claim 16 wherein the processing unit generates output data that is returned to the input unit.

18. A computer program product directly loadable into an internal memory of a digital computer, comprising software code portions for performing the following steps when said product is run on a computer:

creating a first field identifying a number of sub-blocks into which a data item is subdivided;

creating a second field that identifies, within the sub-blocks, respective sections, each including a given number of digits; and

creating a third field that identifies, for each of the sections, a respective one of a plurality of applicable modes that can be adopted for converting the digits in the section between the original format and the compressed format.

19. A process for converting digital input data having plural input data items to digital output data having plural output data items corresponding respectively to the input data items, the process comprising:

for each input data item, dividing the input data item into plural input sub-blocks including first and second input sub-blocks and dividing each of the input sub-blocks into plural input sections of digits including first and second input sections;

converting the first input sections of the first and second input sub-blocks into a first output section code according to a first conversion mode; and

converting the second input sections of the first and second input sub-blocks into a second output section code according to a second conversion mode.

20. The process of claim 19, further comprising, for each of the input data items, creating a configuration that identifies how the input data item is converted into the corresponding output data item.

21. The process of claim 20 wherein the step of creating a configuration for each of the input data items includes:

creating a first field identifying the number of input sub-blocks into which the input data item is subdivided;

creating a second field that identifies how many digits are included in each of the respective input sections of the input sub-blocks of the input data item; and

creating a third field that identifies, for each of the input sections of the input data item, a respective one of a plurality of applicable conversion modes that was used to convert the input section into an output section code.

22. The process of claim 19 wherein the first conversion mode is a data compression mode in which the first output section code includes fewer digits than the first input sections and the second conversion mode is an identity mode in which the second output section code is identical to the first input sections.

23. The process of claim 19 in which the input data items are converted in parallel to respective output data items independently of each other.

24. A process for converting digital input data having plural input data items to digital output data having plural output data items corresponding respectively to the input data items, each input data item being in a compressed format compared to the corresponding output data item and including first and second input section codes, the process comprising, for each input data item:

converting the first input section code of the input data item into a plurality of first output sections of digits according to a first conversion mode, the first output sections including first and second first output sections;

converting the second input section code of the input data item into a plurality of second output sections of digits according to a second conversion mode, the second output sections including first and second second output sections; and

arranging the output sections into sub-blocks of the output data item corresponding to the input data item by arranging the first first output section immediately adjacent to the first second output section in a first one of the sub-blocks and arranging the first second output section immediately adjacent to the second second output section in a second one of the sub-blocks.